National Security Education Center

UNCLASSIFIED

Engineering Institute Lecture Series

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Secure Short Range Secure Wireless Sensor Networks

Tuesday, March 5, 2013

3:30 - 4:30 PM

Los Alamos Research Park, 2nd Floor, Conference Room 203A

Abstract: The National Nuclear Security Administration (NNSA) performs the majority of their manufacturing and surveillance operations in gloves box or hot cells. The cost of installing cabling and vacuum feedthrough's for sensor wiring from radioactive contamination areas to a clean area is extremely expensive and in some case cost prohibitive. The Electrical Power Research Institute (EPRI) completed a study that estimated the cost at $2000 per foot for electrical cables installed in nuclear facilities. It has been estimated for a planned nuclear facility that $50 Million dollars could be saved by replacing wired sensors with wireless.

Short range wireless sensor networks provide an alternative however many NNSA facilities process classified data up to Secret Restricted Data and connect to classified process control systems. Up to now, the only wireless device that could transmit classified data and connect to a red network was a Type 1 NSA certified device. Type 1 devices must be kept in a vault or within visual contact 100% of the time. This is not feasible for wireless sensor nodes. The National Security Agency Information Assurance Directorate has partnered with the Savannah River National Laboratory (SRNL) to develop a design that will allow implementation of short range wireless sensor networks without using Type 1 devices that will be acceptable for transmission of data up to the Secret Level. A major project milestone was completed in May of 2012. NSA issued the NNSA CIO a letter approving the use of the jointly developed wireless hardware for classified applications at the NNSA sites that handle nuclear material.

SRNL has a prototype network operational at the Savannah River Site using Fortress Technologies wireless hardware that has been designed per the NSA Suite B requirements. The background, status and benefits to the US DOE/NNSA of this project will be presented.

Biography: Mr. Cordaro is an Advisory Engineer in the Research and Development Engineering Section of SRNL. For more than 25 years he has been internationally recognized in the areas of nuclear instrumentation, process control and high speed data acquisition and controls systems, particularly as they apply to the development of systems for nuclear component production and for the US Nuclear Stockpile Surveillance program. He is presently leading a DOE/NNSA project with the NSA Information Assurance Directorate to develop an ultra-secure short range wireless sensor network using non type 1 hardware for the DOE/NNSA production and testing facilities.

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For more information contact the technical host Dale Sivils, sivils@lanl.gov, 667-2318 or
the institutional host Chuck Farrar, farrar@lanl.gov, 663-5330.

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